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The Impact of Life Domains on Delinquent Behaviors in Five Caribbean Countries: A Partial Test of Agnew's General Theory of Crime and Delinquency

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The current study tests the applicability of Agnew's (2005) general theory of crime and delinquency to a sample of Caribbean Community (CARICOM) youths and explains the hypothesized direct and indirect/mediated effects of family attachment and peer delinquency on delinquent behaviors. Data for this study were obtained from a 2014 cross-sectional survey of 512 adolescents from the five members of the CARICOM. This study utilizes mediation analysis. Results reveal that adolescents with abuse experience from family members and unsafe school environments are more likely to engage in delinquent behavior. Furthermore, peer delinquency is significantly related to delinquent behavior and mediates the link between child abuse, family history of violence,

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unsafe school environment, and subsequent delinquent behavior. Finally, child abuse generated a lower level of family attachment, and then a higher level of family attachment led to a lower likelihood of subsequent delinquent behavior.
Keywords: delinquent behavior; peer delinquency; child abuse; general theory of crime and delinquency

The risk factor prevention paradigm has been used in the field of criminal justice to explain, predict, and address delinquent behavior among youth (Farrington, 2006). A risk factor is a characteristic or symptom that, when present in an individual, increases the odds of engaging in problem behavior. Prior studies focused on identifying risk factors associated with adolescent delinquent behaviors (Muftic et al., 2014; Ngo & Paternoster, 2014; Ngo et al., 2011; Zhang et al., 2012). Extant research categorizes risk factors into several domains, namely, individual, family, peer, school, community (or neighborhood), and work. Studies have shown that individual factors, such as low self-control, low self-esteem, anxiety, depression, positive attitudes toward violence, and stress increase deviant behaviors of adolescents. Within the family domain, lack of parental supervision and monitoring, low attachment to parents, and parent's criminal history are examples of family risk factors. For school and peer domains, low school commitment, low academic achievement, and association with delinquent peers are significantly associated with deviant behavior. Finally, within the community domain, availability of firearms and drugs, the number of youths in trouble, and low collective efficacy increase a youth's problem behavior. Although previous studies have identified a number of risk factors related to crime and deviant behaviors in self, family, peer, school, and community, few have examined how these domains concurrently affect problem behaviors. An individual's behavior and decision-making process can be made in a multifaceted manner; therefore, a more comprehensive theory is needed to understand the complex mechanism through which many risk factors in various domains influence problem behaviors directly and indirectly.

Agnew (2005) integrated many correlates of crime from existing theories and developed his general theory of crime and delinquency to explain why criminals offend. Agnew (2005) suggested that crime is negatively associated with constraints against crime and positively associated with motivations for crime. Specifically, he proposed five life domains correlated with crime—self, family, peer, school, and work. He then theorized that these five life domains directly and indirectly impact the likelihood of criminal acts. Also, he hypothesized that constraints against crime (e.g., school attachment and family attachment) and motivations for crime (e.g., peer delinquency) can mediate the effects of the five life domains on crime.

Agnew's (2005) general theory of crime and delinquency has not been robustly tested, partly due to the novelty of the theory and the difficulty in obtaining a dataset that can test all the propositions presented in the theory. To date, the authors only know of eight previous empirical tests of the theory (Choi & Kruis, 2019; Cochran, 2017; Grubb & Posick, 2018; Kabiri et al., 2019; Muftic et al., 2014; Ngo et al., 2011; Ngo & Paternoster, 2014; Zhang et al., 2012). All of these empirical studies have only partially tested Agnew's (2005) theory. The aim of the current study is to contribute to emerging research on Agnew's (2005) general theory by testing its applicability to adolescent delinquency in five Caribbean countries (Jamaica, Saint Kitts, Antigua/Barbuda, Saint Lucia, and

Trinidad/Tobago). As this study is the first to apply Agnew's (2005) general delinquency theory to adolescent behavior in Caribbean countries, it tests the external validity of the general theory. In addition, since this study investigates the mediating effects between variables, it provides a more accurate estimate of the usefulness of the general theory.

Agnew's General Theory of Crime and Delinquency

Agnew's (2005, 2011) age-graded general theory of crime is an integrated inductive theory that consolidates the major correlates of crime, specifically focusing on those variables that moderate the strong direct effects on crime and the relationship among those variables (Muftic et al., 2014; Ngo & Paternoster, 2014; Ngo et al., 2011; Zhang et al., 2012). Agnew derived these correlates and risk factors from existing theories, including self-control theory (Gottfredson & Hirschi, 1990), social control theory (Hirschi, 1969; Sampson & Laub, 1993), general strain theory (Agnew, 1992, 2011), social learning theory (Akers, 1985, 1998), rational choice theory (Cornish & Clarke, 2014; Piquero & Tibbetts, 2002), routine activity theory (Felson, 1998), and situational action theory (Wikstrom, 2004) as well as the integrated theories of Thornberry's (1987) general theory of delinquency and Colvin's (2000) theory of crime and coercion (Agnew, 2005, p. 9).

Agnew's (2005) general theory of crime and delinquency explains that crime occurs in the presence of low constraints against crime and high motivations for crime. Constraints against crime are classified into: (a) external control or the likelihood of detection and sanction by others; (b) stake in conformity or the opportunity costs and consequences of offending such as the loss of emotional benefits (esteem and respect of conventional others), material benefits, and long-term goals (advanced education, prestigious and well-paid jobs, and reputation); and, (c) internal control or the belief in the wrongness or immorality of crime and the presence of individual personality traits indicating high self-control and low irritability (Agnew, 2005). Motivations for crime are factors that entice or pull individuals into crime (such as criminal values learned from others, including parents, peers, and gang members) or factors that pressure or push individuals to engage in crime (Agnew, 2005).

Agnew (2005) grouped all specific individual and social environmental variables that directly impact the constraints against and the motivations for crime into five different major life domains: self, family, peer, school, and work. For the domain of self, Agnew (2005) explains that low self-control (characterized by impulsivity, risk-seeking behavior, low ambition, motivation, or perseverance) and irritability (characterized by the tendency to attribute negative events to malicious behavior of others) are associated with delinquency. Key family variables affecting delinquency include: (a) poor supervision/discipline because parents fail to establish, monitor, and implement clear rules prohibiting delinquency; (b) negative parent/juvenile bonding characterized by hostile and adverse family relations; (c) family conflict and child abuse, including physical, sexual, and emotional abuse and neglect; (d) absence of positive parenting leading to the failure of children to learn life skills that would enable them to establish bonds to conventional others; and, (e) criminal parents/siblings. School variables impacting delinquency include: (a) negative bonding to teachers and school because of the juvenile's dislike of teachers and school work; (b) poor academic performance; (c) little time spent on homework; (d) low educational and occupational goals; (e) poor supervision and discipline by teachers and school officials; (f) negative treatment, including verbal and emotional abuse by teachers; and,

(g) absence of positive teaching caused by the failure of teachers to provide high standards for students. In the domain of peers, associating with delinquent friends, peer conflict and abuse, and time spent with peers in unstructured/unsupervised activities strongly predict offending. Peer delinquency has a strong effect on the delinquency of unmarried adults, unemployed adults, or adults employed in bad jobs (Agnew, 2005). Key work variables affecting crime include unemployment, poor supervision/discipline, negative bonding to work, poor work performance, poor working conditions, and criminal coworkers.

In addition, Agnew's theoretical assumptions suggest that the influence of any variable within the peer domain (e.g., the influence of delinquent peers on bullying) can be mediated by gender or level of self-control. As noted in previous studies, peer influence depends on the level of self-control (Thomas & McGloin, 2013). For example, the impact of delinquent peers on bullying is adjusted according to the individual's level of self-control. Students with higher levels of self-control are less influenced by delinquent peers and less susceptible to crime than students with lower levels of self-control. Similarly for gender, studies indicate that males are more likely to be bullied than women (Farrington & Baldry, 2010; Moffitt et al., 2001) and are more susceptible to peer influence than women (McCoy et al., 2019).

Empirical Support for Agnew's Theory

Empirical studies show mixed support for Agnew's (2005) general theory of crime and delinquency. Some studies found that among the life domains, the domain of self, family, and peers significantly predicted delinquency (Choi & Kruis, 2019; Muftic et al., 2014; Ngo & Paternoster, 2014). Ngo and Paternoster (2014) analyzed longitudinal survey data of a random sample of 25,000 eighth-grade students from more than 1,000 U.S. private and public schools. They found that the domains of self (low self-control and attitudes favorable to deviance) significantly predicted alcohol and marijuana use while family and peers domains (poor supervision/discipline and conventional peers, respectively) significantly predicted substance use. Zhang et al. (2012) partially tested Agnew's theory on longitudinal data from the Youths and Deterrence: Columbia, South Carolina, 1979–1981 study. They found that the family domain variables of adolescents' attachment to parents and parental supervision were statistically significant in reducing delinquency. Overall, the life domain model accounted for 39% of the total variance of delinquency. While Zhang et al. (2012) provided strong evidence to support the theory, they noted their operationalization of the concepts were imperfect compared to Agnew's original theory. Moreover, their research was a partial test of the theory, not including adolescents' self and work domains.

Some studies, however, found weak support for Agnew's theory. Ngo et al. (2011) found that among the life domains, only the domains of school (being a high school dropout) and work (having a bad job) significantly predicted the risk of rearrest among 238 adult offenders participating in the Maryland Boot Camp Experiment. Their multivariate models indicated that only the offenders' criminal peers were positively associated with their probability of rearrest—the effect of having delinquent peers on one's own offending was greater at the higher levels of delinquent peers (Ngo et. al., 2011). Overall, their results did not provide strong evidence in support of the theory.

Other studies examined the combined effects of the five life domains, constraints, and motivations on delinquency. Cochran (2017), for example, tested the impact of the life domains (self, family, peers, school, and work), constraints, and motivations on academic dishonesty among a nonrandom sample of 448 adult undergraduate sociology students

during a single academic semester. Once constraints and motivations were introduced into the model: (a) two of the life domain factors were statistically significant in predicting academic dishonesty: the "CPI Socialization scale and attitudes against cheating"; (b) three of the constraint measures had statistically significant effects: the "certainty and severity of shame" and the "threat of severe formal sanctions"; and, (c) three of the four motivation measures also retained significance: "pressure from friends to do something wrong, skipping classes, and the number of credit hours enrolled" (Cochran, 2017, p. 1304).

Outside of the United States, studies indicate strong support for Agnew's theory. Muftic et al. (2014) tested the applicability of Agnew's general theory of crime among a sample of 1,756 juveniles residing in Bosnia and Herzegovina who participated in Wave 2 of the International Self Report Delinquency Study ("ISRD-2"). Their analysis indicated that low self-control, favorable attitudes toward violence, parental bonding, delinquent peers, the extent of school disorder, school attachment, neighborhood disorganization, and neighborhood collective efficacy were significantly associated with the delinquent behaviors of adolescents from Bosnia and Herzegovina. Another recent study by Choi and Kruis (2019) tested the applicability of Agnew's general theory among a sample of 2,808 eight-grade students living in South Korea who were surveyed in Wave 2 (2004) and Wave 3 (2005) of the Korean Youth Panel Survey (KYPS). They found that all four life domains (self, family, peers, and school) significantly predicted cyberbullying. Low self-control, low belief in norms, low parental attachment, and delinquent peers significantly increased cyberbullying. Peer and teacher attachment significantly reduced cyberbullying. Across both traditional and cyberbullying models, low self-control, peer delinquency, and teacher attachment significantly predicted the likelihood of the two types of bullying.

Four out of the six prior studies partially tested the theory. Agnew (2005, p. 185), himself, acknowledged that the complexities of the theory made it difficult to find a dataset containing all five life domains. Since a full test of the theory required analysis of the reciprocal, interactive, contemporaneous, and mediation effects among all the life domains, Agnew recommended partial tests of his theory (2005). Despite its theoretical complexities, prior criminologists responded to Agnew's calls for testing his theory by taking some parts of the life domains and exploring their influence on crime and delinquency. With this in mind, it is our intention to provide the first test of the theory using a truly comparative, cross-national framework.

Delinquent Behavior in the Caribbean Community

Juxtaposed against the beauty and vibrant culture of the countries of the Caribbean region are their violent crime rates which rate among the highest in the world (Sutton & Ruprah, 2017). Results from the survey of 3,000 victims in each of the five Caribbean countries, including the Bahamas, Trinidad and Tobago, Barbados, Jamaica, and Suriname, indicate that the average rate of victimization by assault and threat is higher than in any other region, including Latin America (6.8 % vs. 4.7%). Specifically, one in three replied they had lost significant others to violence. Compared with the global average, guns are used about twice more often in robberies and three times more often in assaults in the Caribbean countries (Sutton & Ruprah, 2017).

Crime and violence proliferate in the Caribbean countries, most prominent of which are murder, illegal drug trafficking, and gang violence. According to the UNDP (2012) report, statistics show that about 6% of youths from these countries join gangs. Social factors associated with youth participation in gangs include high youth unemployment rates, lack

of educational opportunities, domestic violence, personal experience of gang violence, and poor citizenship in these countries. Other forms of crime that occur more frequently in the Caribbean include organized crime such as trafficking and drug business (UNDP, 2012).

Studies in the Caribbean countries report that school violence is more common in secondary schools, ranging from harassment, fights, vandalism, sexual assault, and murder. The main reasons for school violence are self-defense, protection of oneself and their friends, and intimidation against others (Schäfer & Korn, 2002; Sebastião et al., 2002). In general, males are more likely to be the victims of youth violence (Schäfer & Korn, 2002; Sebastião et al., 2002) and are more likely to use violence when resorting to conflict resolution (UNDP, 2012).

Adolescents who directly or indirectly engage in school violence are negatively affected in their school lives (Morotti & Roberts, 2000). This leads to a decrease in academic achievement and quality of life, which in turn leads to poor school performance. As a result, studies have frequently reported that school violence was related to reading achievement, increased drug use, increased threats to public school teachers, and increased classroom violence (National Educational Goals Panel Report, 1998).

The major contributing risks and protective factors to school violence vary at the individual, family, school, and community levels. Some studies on youth violence in Caribbean countries have reported results in relation to important risk and protective factors (Blum & Ireland, 2004; Katz & Fox, 2010; Maguire & Fishbein, 2016; Williams, 2013). Maguire and Fishbein (2016) found that the history of family antisocial behavior and parental attitudes in favor of antisocial behavior were stronger risk factors for problematic behaviors of youth in Trinidad and Tobago, but no significant family protection factors were found. In addition, Katz and Fox (2010) and Williams (2013) have identified several important factors influencing youth violence or gang participation at the school level. Peer relationships, lack of positive interaction with teachers, opportunities for pro-social involvement, and low commitment to school were found to be the main causes. However, there is no theoretical explanation in the field of criminology about how demographics differ from the widespread risk and protective factors of youth violence in different areas in Caribbean countries.

Current Study

The current study attempts to add to the growing body of research on juvenile delinquency by performing partial tests on Agnew's (2005) general theory using data reported from adolescent samples from five Caribbean countries. Study findings are expected to contribute to evidence-based decision-making as well as theoretical implications for the theory itself. Specifically, the current research has three major contributions: *First*, this study tests the "generality" of Agnew (2005) general theory as applied to juvenile delinquency. *Second*, the study evaluates the mediating effect of motivation and constrains between life domains and delinquent behavior. *Third*, this is the third study to test Agnew's (2005) general theory using non-American samples, including Bosnia and Herzegovina, South Korea, and Iran (Choi & Kruis, 2019; Kabiri et al., 2019; Muftic et al., 2014), but the first to apply this theory to the Caribbean population.

Following Agnew's (2005) theoretical propositions, we test the research hypotheses as follows:

Hypothesis 1: The self (i.e., low self-esteem and fear of crime), family (i.e., child abuse and family history of violence/crime), and school (i.e., unsafe school environment) domains

will be directly and positively associated with delinquent behaviors among the Caribbean Community youth.

Hypothesis 2: Constraints against delinquency (i.e., school attachment and family attachment) will be directly and negatively associated with delinquent behaviors, but motivations for delinquency (i.e., peer delinquency) will be directly and positively associated with delinquent behaviors among the Caribbean Community youth.

Hypothesis 3: Constraints against delinquency (i.e., school attachment and family attachment) and motivations for delinquency (i.e., peer delinquency) will partially or fully mediate the link between the life domain factors (the self [i.e., low self-esteem and fear of crime], family [i.e., child abuse and family history of violence/crime], and school [i.e., unsafe school environment] domains) and delinquent behaviors among the Caribbean Community youth.

METHODS

Data and Sample

This study analyzed 512 self-reported survey data from students enrolled in seven schools in the five members of the Caribbean Community (CARICOM): two schools in Jamaica, one school in Saint Kitts, two schools in Antigua/Barbuda, one school in Saint Lucia, and one school in Trinidad/Tobago. The student surveys were collected as part of the Youth-on-Youth Violence Project funded by the Kingdom of Spain to assess the incidents of gang violence and delinquency within schools. The student surveys used in this project were developed after a pilot study was conducted with students in Jamaica. The surveys included a wide range of self-reported questions that measured not only students' engagement in a set of delinquent behaviors, but also various risk and protective factors of delinquency at the individual, family, and school levels.

The procedures of data collection have been described elsewhere in more detail (Gentle-Genitty et al., 2017). To recruit study participants, specific schools that reported a relatively higher prevalence of gang violence and school delinquency were first identified and asked to participate in the project per country. Once the schools agreed to participate, school principals selected an approximately ten percent of a sample that represented overall students' demographics (e.g., gender) and then distributed survey questionnaires to the selected students during the summer of 2014. Among the groups of students, 512 students completed the survey. All variables for the analysis are described in the Table 1.

MEASURES

Dependent Variables

Delinquent Offending. Students' delinquent offending was a binary variable that indicated whether they engaged in at least one type of delinquent activities listed in the surveys (see Table 1). Students were asked to check "yes" if they committed the following types of school delinquency: (Theft from the classroom, theft from students, graffiti, fighting, weapon carrying, drug use, drug sale, alcohol use, marijuana use, marijuana sale, and bullying). Each student's responses were summed up and then coded 1 if the score was 1 or greater; otherwise, they were coded 0 if the score was 0.

TABLE 1. Description of the Caribbean Youth Sample

VARIABLES		Range	Mean	*SD*
Dependent variable				
Delinquent behavior	Theft from classroom	0–1	.078	.269
	Theft from students		.072	.259
	Graffiti		.137	.344
	Fighting		.149	.356
	Weapon carrying		.119	.325
	Drug use		.090	.287
	Drug sale		.069	.253
	Alcohol use		.137	.344
	Marijuana use		.088	.284
	Marijuana sale		.071	.256
	Bullying		.108	.310
	Gang fights		.106	.308
	Independent variables			
	Low self-esteem			
Independent variables				
- Low self-esteem	Felt that your life was not worth living	1–5	2.997	1.478
- Fear of crime	Were afraid of being a victim of a fight or other form of violence in your school?	1–5	2.148	1.391
- Child abuse	Had a parent or other adult swear, insult you, put you down, or humiliate you?	1–5	2.378	1.480
	Had a parent or adult push, grab, or throw something at you?		2.234	1.441
- Family history of violence/ crime	Lived with someone who was a problem drinker or abused drugs?	1–5	1.493	1.101
	Had a member in your family who thought of or attempted suicide?		1.578	1.116
	Had a family member go to jail or prison?		2.091	1.225
- Unsafe school environment	Thought gangs were a problem in your school?	1–5	2.586	1.450
	Known which members of your school have joined gangs?		2.356	1.427
	Been able to list five or more incidents of gang activity in your school?		2.454	1.373
	Knew when and where most gangs hang out in and around your school?		2.346	1.452

VARIABLES		Range	Mean	*SD*
	Seen members showing gang colors, hand signs, or gang "bling" in your school?		2.246	1.474
Intervening variables				
- School attachment	Felt your teachers cared if you succeeded?	1–5	3.136	1.509
	Had teachers or other adults in your school notice when you did something well and told you about it?		3.095	1.531
	Known the punishment for breaking a school rule?		3.099	1.546
	Had teachers or other adults, in your school, who you would talk to about something important?		2.517	1.516
	Felt you got along with your teachers?		3.120	1.395
	Felt that all students at your school were treated fairly by school officials?		2.346	1.377
	Participated in or served as a leader in positive school activities?		2.368	1.431
	Been rewarded for participating in your school activities?		2.427	1.490
	Enjoyed school?		3.678	1.326
	Felt what you are learning in school is important to your future?		4.480	1.066
	Tried to do your best in school?		4.139	1.342
- Family attachment	Been praised by your family for doing the right thing?	1–5	3.221	1.518
	Felt your family and friends expected you to succeed?		3.977	1.293
	Felt that your family loved you or thought you were important?		3.672	1.457
	Attended religious services with your family?		3.084	1.494
	Spent quality time with your family?		3.421	1.432
	Felt your family cared what time you came home every evening?		3.865	1.418
- Peer delinquency	Been suspended from school	1–5	2.339	1.417
	Been expelled from school		1.654	1.214
	Dropped out of school		1.839	1.303
	Carried a gun to school		1.321	.939
	Carried a knife or other weapons		2.081	1.404
	Sold illegal drugs		1.708	1.291

VARIABLES	Range	Mean	*SD*
Stolen or tried to steal something		2.114	1.376
Been arrested or put in jail		1.667	1.197
Been members of a gang		2.021	1.429

Independent Variables

Low Self-Esteem. Low self-esteem was one single-item measure that asked students about the degree of self-worth and confidence in their personal and school lives: "I felt that my life was not worth living." The response options were a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). A higher value indicated a lower level of self-esteem.

Fear of Crime. Fear of crime was one single-item measure that asked students about a negative emotional reaction to crime: "I was afraid of being a victim of a fight or other form of violence in your school?" The response options were a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). A higher value represented a higher level of fear of crime.

Child Abuse. Child abuse reflected the extent to which students were abused physically, emotionally, and sexually by adult family members with whom they lived together. It was measured by two items and examples included "I had a parent or adult who swore, insulted, put down, or humiliated me," and "I had a parent or adult who pushed, grabbed, or threw something at me." These items demonstrated satisfactory internal reliability (Cronbach's alpha = .76). The response options were a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). We conducted a confirmatory factor analysis to create a single construct. A higher score indicated a more severity of child abuse

Family History of Violence/Crime. This measure was assessed with three items on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Examples included "lived with someone who was a problem drinker or abused drugs?" "had a member in your family who thought of or attempted suicide?" and "had a family member go to jail or prison?" This measure was a composite measure, which gives a single score based on a series of responses to various items. A higher score represented a higher level of more family members having a criminal and violent history.

Unsafe School Environment. An unsafe school environment indicated the extent to which students perceived that their schools were unsafe and violent, which was measured with five items. Example items included "I was afraid of being a victim of a fight or other forms of violence in my school," and "I felt unsafe at my school" (Cronbach's alpha = .75). The response options were a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). We conducted a confirmatory factor analysis to create a single construct with a higher score indicating a higher level of the unsafe school environment perceived by students.

Intervening Variables

School Attachment. School attachment was assessed with 11 items. A factor analysis was performed to create one latent variable (Cronbach's alpha = .73). Each survey item was a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). A higher value represented a higher level of school attachment.

Family Attachment. Family attachment was operationalized as the degree of students' perceptions of emotional and social support from their family members and was measured with six items. Example items included "I felt my family loved me or thought I was important," "I was praised by my family for doing the right thing," and "I have spent quality time with my family." Each survey item was a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). We conducted a factor analysis to create a single construct (Cronbach's alpha = .74). A higher value represented a higher level of perceived family attachment.

Peer Delinquency. Peer delinquency is defined as the extent to which students had close delinquent friends in their schools. They were asked to rate nine items that measured the level of peer involvement in specific risk and delinquent activities (e.g., school suspension, carrying guns or other weapons, selling drugs, and gang involvement). A factor analysis showed that these items were loaded together as one latent variable (Cronbach's alpha = .91). Each survey item was a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). A higher score represented that students had more close friends who committed themselves to risk and delinquent activities in schools.

Control Variables. Students' gender, ethnicity, and age were included into a final analysis as control variables. Gender was categorized as a binary variable (male = 1 [48.2%] and female = 0 [51.8%]). Similarly, ethnicity was divided into two groups (Black students = 1 [69.3%] and others = 0). Age was a binary variable indicating an 11–13 age group, coded as 1 (24.5%) and 14 or an older age group, coded as 0 (75.5%).

Analysis

Logistic regression models based on methods for mediation analysis with a dichotomous dependent variable were employed to depict all hypothesized direct and indirect/mediated effects on delinquency, utilizing M*plus* 7.4 (Muthén & Muthén, 2011). This study proceeded with a series of stages. The first stage in our analyses was to examine zero-order relationships between both delinquency and each predictor. The first step of the second stage involved estimating mediation models depicting the direct effect of several measures in three life domains (i.e., self, family, and school) on delinquency. The second step involved estimating mediation models showing the indirect/mediated effect of those measures on delinquency through constraints and motivation using the causal steps approach via the *difference* in coefficients approach. In the last stage, the study estimated the magnitude of strength of indirect/mediated effects via the *product* of coefficients approach (i.e., the extent to which the mediating constraints and motivation variables transmit the effects of the life domain measures to delinquency).

Significance Testing of the Mediated Effect

The three major approaches to methods for the statistical significance test of the mediation analysis were used: (a) causal steps, (b) difference-in-coefficients, and (c) product-of-coefficients (MacKinnon, 2000). The single-mediation model is present in Figure 1, and four separate tests of the causal steps approach are explained at the bottom of Figure 1. Mediation analysis decomposed the total effect of life domains on delinquency (c path) into a direct effect (c' path in Figure 1) and indirect effect (a and b paths in Figure 1). In simple mediation analyses, the indirect effect was calculated as either the difference in coefficients (c-c' paths) used in the second stage of this analysis or the product of the a and b paths (ab paths) used in the third stage. In general, the difference-in-coefficients and

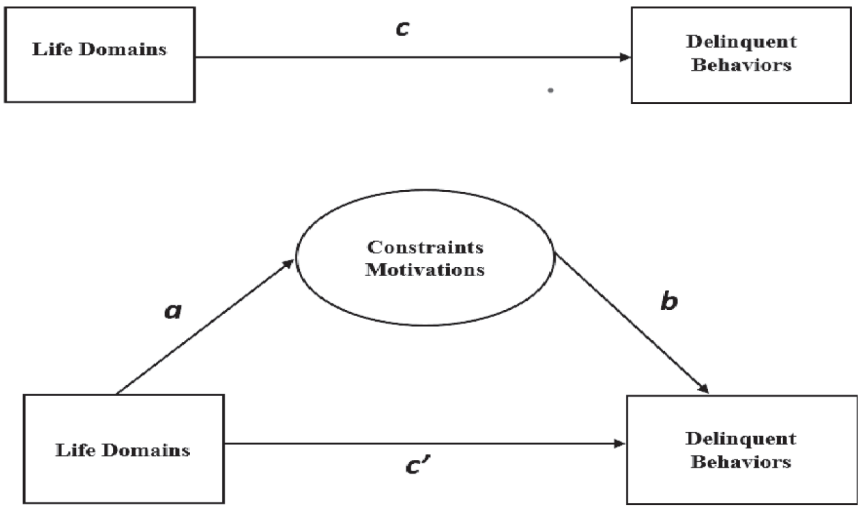

FIGURE 1. The single-mediation model.

where i_1, i_2, and i_3 are the regression intercepts, and e_1, e_2, and e_3 are the residuals in Equations 1, 2, and 3, *respectively*. In these equations, Y is the dependent variable, X is the independent variable, and M is the mediating variable. *c* is the coefficient relating the independent variable to the dependent variable in Equation 1. *c*' is the coefficient relating the independent variable to the dependent variable after adjusted for the mediating variable, and *b* is the coefficient relating the mediating variable to the dependent variable after adjusted for the independent variable in Equation 2. *a* is the coefficient relating the independent variable to the mediating variable in Equation 3. The first test is to examine the relation between an independent variable and a dependent variable as shown in Equation 1(c). Second, a relation between an independent variable and a hypothesized mediator is required as shown in Equation 3(a). Third, it is required to test a relation between a mediator and a dependent variable adjusted for an independent variable as shown in Equation 2(b). Lastly, the coefficient associating an independent variable with a dependent variable before adjusted for a mediator must be larger than the coefficient relating an independent variable to a dependent variable after adjusted for a mediator (Baron & Kenny, 1986; Judd & Kenny, 1981).

product-of-coefficients for estimating the indirect/mediated effect will lead to the same results when both the mediator and dependent variable are continuous (MacKinnon et al., 2007). However, findings of previous studies revealed that the different estimates of the indirect/mediated effect no longer coincide when logistic regression analysis is employed

with a dichotomous dependent variable (MacKinnon & Dwyer, 1993; MacKinnon et al., 2007). This study used full-standardization to equalize the scales of the coefficients across multiple different logistic regression models for mediation analysis to make the coefficients comparable to coefficients from the same factor of the subsequent models.

RESULTS

Correlations

The first stage of the analysis was the examination of zero-ordered correlations between each predictor and delinquency (see Table 2). Each of the predictors (child abuse, family history of violence/crime, and unsafe school environment) was significantly related to delinquency in the predicted (positive) directions, while low self-esteem and fear of crime were not significantly related to delinquency. Two of the mediators (family attachment and peer delinquency) correlated with delinquency well in the predicted directions, while school attachment was not significantly related to delinquency. Additionally, family history of violence/crime and an unsafe school environment were correlated to school attachment and peer delinquency. The findings from the estimates of zero-order correlations seemed to be similar to the higher order correlations in the multivariate model. This informed us that there were no biased coefficients and inflated standard errors in the full model. Then, we decided that all inter-correlated predictors were included in the same multivariate model.

Direct and Indirect Effects on Delinquency

The second stage of the analysis estimated the mediation models via the four-step approach (Baron & Kenny, 1986). We first estimated the direct effects of multiple variables in life domains on delinquency in order to estimate the coefficients relating the independent variables to the dependent variable. The results are presented in Table 3 (see Model 1 of Table 3). The findings indicate that child abuse and unsafe school environment had a direct and significant effect on delinquency ($\beta = .193$, $p < .01$; $\beta = .179$, $p < .01$). In other words, the respondent's experiences of abuse by parents or other adults and an unsafe school environment were associated with higher rates of delinquency. Specifically, the results indicated that male respondents may simply be more likely to engage in delinquency.

The second step of this stage was to estimate the direct effects of multiple variables in the life domains on the mediators including school attachment, family attachment, and peer delinquency to estimate the coefficients relating the independent variables to the mediating variables (see Figure 2). Lower self-esteem was significantly associated with higher levels of family attachment ($\beta = –.256$, $p < .001$). Also, respondents who experienced child abuse ($\beta = .127$, $p < .05$), who had family history of violence/crime ($\beta = .086$, $p < .001$), and who had unsafe school environment ($\beta = .183$, $p < .001$) were more likely to associate with peer delinquency.

The third step estimated whether there were the mediating effects of the constraints against delinquency and the motivations for delinquency on delinquent behaviors after adjusting for control variables (see Figure 2). Respondents who had a higher level of family attachment were generally at a lower risk of engaging in delinquent behavior ($\beta = –.183$, $p < .05$), while respondents who had more delinquent peers were at a heightened risk of delinquency ($\beta = .322$, $p < .001$).

TABLE 2. Correlations Among the Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12
1. Delinquency	1	.035	.001	.192**	.174**	.151**	–.041	–.168**	.362**	.135**	.106*	.021
2. Low self-esteem		1	–.011	.140**	.111*	.000	–.263**	–.411**	.067	–.040	–.133**	–.082
3. Fear of crime			1	.106*	.048	.168**	.141*	.008	.055	–.010	–.115*	.044
4. Child abuse				1	.345**	.178**	.078	–.147**	.282**	.078	–.062	–.051
5. Family history of violence/crime					1	.277**	.150**	–.091	.355**	.108*	–.092	–.089
6. Unsafe school environment						1	.261**	.100	.275**	.057	–.024	–.096
7. School attachment							1	.492**	.038	.014	–.007	–.046
8. Family attachment								1	–.143**	–.070	–.047	–.034
9. Peer delinquency									1	.182**	.076	.006
10. Age										1	.143**	.081
11. Sex (male = 1)											1	.040
12. Race (Black = 1)												1

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TABLE 3. Path Results of Mediation Analysis

		Model 1		Model 2	
		Estimate	S.E.	Estimate	S.E.
Control variables					
	Age	0.209	0.138	0.068	0.175
	Sex (male = 1)	0.366*	0.157	0.163	0.192
	Race (Black = 1)	0.276	0.165	0.182	0.224
Life domains					
Self	Low self-esteem	0.075	0.053	–0.031	0.076
	Fear of crime	–0.028	0.055	–0.128	0.069
Family	Child abuse	0.193**	0.078	0.147	0.101
	Family history of violence/crime	0.036	0.029	–0.017	0.041
School	Unsafe school environment	0.179**	0.075	0.105	0.095
Intervening variables					
Constraints against delinquency (State in conformity)	School attachment			–0.014	0.102
	Family attachment			–0.243*	0.112
Motivations for delinquency	Peer delinquency			0.352***	0.1
Model Fit Information					
CFI		0.987		0.997	
TLI		0.998		0.999	
RMSEA		0.001		0.001	

*$p < .05$. **$p < .01$. ***$p < .001$.

The final step involved estimating whether the constraints against crime and the motivations for crime mediate the relationships between life domain variables and delinquency (see Model 2 of Table 3). Respondents with higher levels of family attachment were generally at a lower likelihood of engaging in delinquent behaviors ($\beta = –.243$, $p < .05$). Also, respondents who had more delinquent peers were at higher risk of delinquency ($\beta = .352$, $p < .001$).

Based on the findings revealed above, the significant impacts of chile abuse and unsafe school environment were rendered nonsignificant after adjusting for the mediating family attachment and peer delinquency variables. It indicated that these variables fully mediated the link between child abuse and unsafe school environment variables and delinquency.

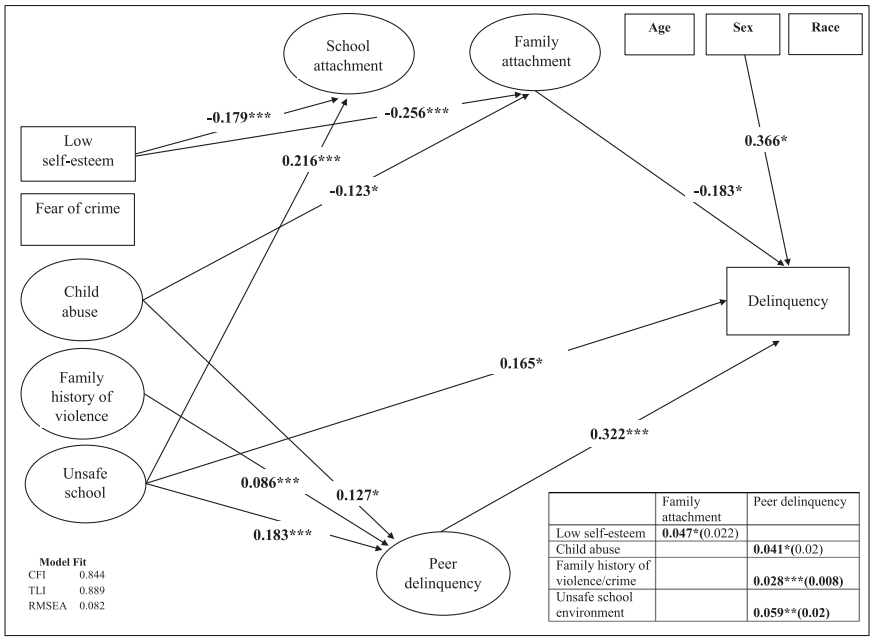

FIGURE 2. Substantive structural equation model results of delinquency*:* Coefficients for all direct paths that emerged as significant are shown.

TABLE 4. Indirect Effects on Delinquency Through Constraints Against Delinquency and Motivations for Delinquency

	Indirect Effect on Delinquency through …					
	Constraints against delinquency				Motivations for delinquency	
	(1)School attachment		(2) Family attachment		(3) Peer delinquency	
	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Low self-esteem	0.021	0.016	0.047*	0.022	0.015	0.013
Fear of crime	–0.01	0.009	0.001	0.007	0.005	0.012
Child abuse	–0.005	0.008	0.022	0.015	0.041*	0.02
Family history of violence/ crime	–0.004	0.004	0.002	0.004	0.028***	0.008
Unsafe school environment	–0.026	0.019	–0.02	0.013	0.059**	0.02

Model Fit Information	
CFI	0.844
TLI	0.889
RMSEA	0.082

*$p < .05$. **$p < .01$. ***$p < .001$

Technically, the difference-in-coefficients approach does not provide any numerical value for the strength of the mediating effect, though it provides evidence of which the hypothesized mediated effect is non-zero.

In the third stage, this study turned to a discussion of an alternative approach, the product-of-coefficients to estimate the magnitude of strength of mediation. Findings are shown in Table 4. Respondent's low self-esteem was significantly associated with delinquency through family attachment ($\beta = .047$, $p < .05$). Child abuse, family history of violence/crime, unsafe school environment were significantly associated with delinquency through peer delinquency ($\beta = .041$, $p < .05$; $\beta = .028$, $p < .001$; $\beta = .059$, $p < .01$, respectively). Respondents who had lower levels of self-esteem were more likely to have higher levels of family attachment, which, in turn, indirectly increased the level of delinquency. Respondents who had the experience of child abuse, had family members with violence/crime history, and had an unsafe school environment were more likely to associate with delinquent peers that, in turn, demonstrated the high odds of engaging in delinquent behaviors.

DISCUSSION

The purpose of the current study was to examine whether self, family, and school domains predicted delinquent behaviors directly and indirectly via the constraints against delinquency (school attachment and family attachment) and the motivations for delinquency (peer delinquency) within the conceptual framework of Agnew's (2005) general theory of crime and delinquency. Using a sample of Caribbean youth, this study employed three approaches—causal steps, difference-in-coefficients, and product-of-coefficients—to methods for the statistical significance test of the mediation analysis. By doing so, it provided a formal test of mediation (i.e., the product of coefficients approach) estimating the magnitude of strength of the indirect/mediated effect via the use of full-standardization of the logistic regression coefficients. Thus, the study was able to provide a more accurate estimate of the mediating effects of the constraints against delinquency and the motivations for delinquency.

Findings from the mediation models partially support the first hypothesis. There was a clear direct impact of child abuse and an unsafe school environment on delinquent behaviors, consistent with several past findings (Choi & Kruis, 2019; Ngo & Paternoster, 2014). Youth who had the experience of being abused by parents or other adults and an unsafe school environment were more likely to engage in delinquent behaviors. This indicated that child abuse and unsafe school environment were a significant risk factor predicting delinquent behaviors in Caribbean countries.

The second hypothesis, which posited that delinquent behaviors are more likely to occur when constraints against delinquency is low and motivations for delinquency is high, is fully supported. Youth who had a higher level of family attachment were less likely to engage in delinquency, and those associating with delinquent peers were more likely to engage in delinquency. This finding is consistent with previous studies, supporting the fact that family attachment is a protective factor for delinquency (Harris-Waller et al., 2016; Keijsers et al., 2012; Keijsers et al., 2010), while peer delinquency is a risk factor for delinquency (Elliott & Menard, 1996; Lee et al., 2014; Thornberry et al., 1994).

The final finding of interest is the mediating effects of constraints against delinquency and motivations for delinquency on the link between the life domain factors and delinquent

behaviors. According to the finding via the causal steps approach to mediation (i.e., the difference in the coefficients approach), Caribbean youth who had lower levels of self-esteem indirectly increased the level of delinquency by decreasing family attachment. Also, Caribbean youth who experienced child abuse, family violence/crime history, and unsafe school environment were more likely to associate with delinquent peers, which in turn, increased their likelihood of engaging in delinquent behavior.

Also, peer delinquency mediated the link between child abuse, family history of violence, and unsafe school environment and the delinquency. These suggest that Caribbean youth who experienced child abuse, family history of violence, and unsafe school environment are more likely to have delinquent peers, which in turn, leads to delinquency. Simply put, the findings reveal that self, family, and school characteristics should be considered simultaneously in order to understand Caribbean youth's delinquent behaviors. This also partially supports the first research hypothesis.

The results of the current study have important implications. In terms of policy and practice, criminal justice and community program interventions aimed at providing therapy and treatment for individuals who experienced family abuse or traumatic experiences due to unsafe school environments could be a viable way to prevent problematic behavior later in life. Interventions and/or treatment programs for delinquent youths may have effects beyond simply diverting them away from the criminal justice system. Reconnecting individuals with family, conventional peers, safe schools, and so on may also help break the cycle of delinquent behavior (Widom, 1989).

The current study examined the role of mediating factors between an adolescent's life domains and delinquent behavior. However, there is still much to learn about the different effects of mediators. While factors such as child abuse, family history of violence, and unsafe school environment all seem to significantly influence delinquency through peer delinquency, child abuse only impacts delinquency through the mediating effects of family attachment. Further research is necessary to understand the different levels of influence on the delinquency of these two variables.

Currently, the educational system of the Caribbean countries faces serious challenges as a result of concomitant economic and social problems. Major economic problems include youth unemployment, skills shortages in key areas of the economy, and discrepancies between graduates and available jobs. Also, reduced family influence, channels of international illegal drug trafficking, high crime rates, and gang warfare, and HIV (human immunodeficiency virus)/AIDS (acquired immunodeficiency syndrome) are the major social challenges in the region. These challenges have resulted in adverse consequences in their educational system leading to high illiteracy rates, low numeracy skills, significant differences in grades, and curriculum changes without the proper assessment to determine whether these changes are necessary and effective. Countries in the Caribbean region are further battling inadequate policies and resources on teacher recruitment and selection, student certification skills for the workforce teacher training and licensing (Cochran-Smith, 2001; Lewis & Simmons, 2010).

A major body of research further stress the need to contextualize the educational system by understanding the local culture of students that may affect their preconceptions and learning abilities within the classroom (George & Lubben, 2002; Lewis & Simmons, 2010; Zambrana, 2017). Research further indicates the value of recognizing the distinct Creole language, culture, and social identities of the Caribbean peoples by incorporating the Creole language as a medium of instruction in the formal educational system of the Caribbean region (Zambrana, 2017). Performance indicators of literary and numeracy

developed within the Western educational system may be irrelevant without taking into context the distinct cultural and social identities of the Caribbean peoples (Zambrana, 2017).

Taking into consideration the different social and cultural context of Caribbean schools compared to the U.S. educational system, school policy solutions to the problem of peer delinquency in school settings are not obvious. Although much of society, including the Caribbean countries, believes intuitively that the delinquent adolescents pose a danger to nondelinquent adolescents, it may not be possible to require that delinquent youth attend classes separately from nondelinquent youth unless these delinquent youth have been identified as having emotional or behavior disorders (Kauffman et al., 2002). Although there are arguments indicating that separating problem adolescents from many other conventional ones in a school setting is defective because this practice identifies, stigmatizes, and segregates them from their peers without disabilities, there is similarly a strong consensus within or across the several domains of education, including education, mental health, juvenile justice, and community programming, that such policy measure is necessary to provide a more supportive, more individualized, and more carefully monitored classroom environment for these students (Brigham & Kauffman, 1998; Kauffman et al., 2002).

While the current study makes an important contribution to the field and literature, a key limitation and future study suggestions should be noted. This study used cross-sectional data that limits the examination of causality and the long-term effects of life domain factors. The lagged effect or contemporaneous effect between or among the life domains cannot be perfectly investigated using cross-sectional data. Thus, analysis using longitudinal data is necessary to examine the complexities among life domains. Also, the study utilizes self-reported variables on delinquent behaviors, so we expect underestimated actual delinquency rates.

One of the objectives of this study was to test the external validity of Agnew's (2005) general theory to juvenile delinquency in Caribbean countries. The concept of race/ethnicity within the Caribbean context, however, is complex and distinct from the U.S. racial constructs of Black/non-Black. In Caribbean society, for instance, race can be classified in a variety of ways with Black/Africans historically referring to people who experienced slavery (Alleyne, 2005). Racial groupings also included White (Mediterranean Europeans), Black, Africans (people from Africa regardless of skin color), Indigenous brown peoples such as Carib (Trinidad, Martinique) or Taino (Jamaica) (Alleyne, 2005). Due to the racial diversity of Caribbean countries and the distinct social and cultural evolution of the concepts of Black/non-Black races within their societies, it may be difficult to draw conclusions about the usefulness of Agnew's (2005) integration theory. Further research is necessary to determine whether the observed differences between Blacks and non-Blacks are the product of the lack of generalization of Agnew's (2005) general theory or a reflection of the cultural uniqueness of the Caribbean states. Future studies should conduct this study using data from youths from various countries to answer this question.

Conclusion

The purpose of this study was to investigate the applicability and generalizability of Agnew's general theory of crime and delinquency (2005) by testing the hypothesized direct and indirect/mediated effects of the constraints against delinquency and motivations for delinquency from several variables within self, family, and school domains on delinquency among Caribbean youths. The study findings were consistent with extant research

testing Agnew's (2005) theory on juvenile delinquency among American youths as well as youths in other countries. Although there was no significant intervening/mediating influence of school attachment on the link between self, family, and school domains and delinquent behaviors, the results confirmed the applicability and generalizability of the theory across different cultural heritage. Future studies should examine the multidimensional factors such as individual, family, peer, and school that influence adolescent delinquent behaviors. If family attachment and peer delinquency exacerbate adolescent delinquent behaviors, then parents and school teachers should develop intervention programs that reduce the influence of delinquent peers and increase attachment with the family members.

Overall, the current study provides mixed support for Agnew's (2005) general theory of crime and delinquency. Statistical analysis indicates that Agnew's (2005) theory has predictive effects as a general theory of delinquent behavior of adolescents in the Caribbean region. In the current age of globalization, it is necessary to study juvenile delinquency in the Caribbean region and the applicability of Agnew's (2005) general theory in distinct cultural contexts. Violence has increased in several schools in the CARICOM area over the past few years. According to the Caribbean Human Development Report on Civil Security, acts of school violence have become more brutal in recent years (UNDP, 2010). The underlying factors and causes of school violence are multidimensional, resulting from the level and pattern of violence in the country, community, and family which in turn reflects the dominant political and socioeconomic conditions, social attitudes, cultural traditions, values, and laws of the CARICOM (Jones, 2007). There is much more to be done in the future to extend and test Agnew's (2005) variable-centered approach to draw conclusive conclusions about its usefulness as a general theory of crime and delinquency.

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